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DIVISION OF FORESTRY.

FOREST AND ORNAMENTAL TREE SEED AND SEEDLINGS FOR SALE AT THE GOVERNMENT NURSERY.

The Division of Forestry keeps constantly on hand at the Government Nursery, seed and seedlings of the important native and introduced trees. These are sold at prices just covering the cost of collection or growing.

The list includes both forest and ornamental trees, such as Silk Oak, Koa, various species of Eucalyptus, Golden and Pink Showers, Pride of India, Poinciana, Albizzia, etc. The price of the seed varies from 10 to 50 cents per ounce. The seedlings may be had for 2½ cents each, except a few kinds which are 5 cents. Seed of the various palms is also for sale; the price per 100 varying from \$1.00 to \$2.50. All seed is tested before being sent out, which insures its being good.

All communications in regard to seed or trees should be addressed to David Haughs, Forest Nurseryman, Box 207, Honolulu, Hawaii.

RALPH S. HOSMER,
Superintendent of Forestry.

DIVISION OF ENTOMOLOGY.

To give information about insects free of charge is one of the duties of this Division and Hawaiian readers are hereby invited to make inquiry in person and by mail. In order to be able to advise intelligently or send the right kind of useful insects for relief we like and sometimes it is indispensable for us to see the insect suspected or caught in the act, also specimens of the injury. In a tin with a hole or two, or a wooden box specimens may be mailed at 3rd class rates. When specimens are not accompanied by letter *always* write your name and address in the upper left-hand corner of the package. Address all communications **SUPERINTENDENT DIVISION OF ENTOMOLOGY, P. O. BOX 207 HONOLULU, HAWAII.**

EDW. M. EHRHORN,
Superintendent.

THE HAWAIIAN FORESTER AGRICULTURIST

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An article on "Flowers of the Papaya" in the August number of the Forester should have been credited to the Agricultural News (West Indies), as it was a translation specially prepared for that paper.

Tropical Life (London) commends to all interested in the cane sugar industry a book called "The World's Sugar Industry—Past and Present," by H. C. Prinsen Geerlig. It contains 400 pages including index, and is published by Norman Rodger, Altrincham, Manchester, price 12s. net or 14s. post free.

Dr. Norgaard's reports in this issue deserve wide publicity, particularly the section devoted to human and bovine tuberculosis. There is no subject of more vital importance to the human race at the present day. The passage of the milk ordinance by the Honolulu supervisors, prohibiting the distribution of milk from cows uncertified as free from taint of tuberculosis, marked an era in the fight against the great white plague in Hawaii. It is not to the credit of the other counties of the Territory, or the legislature, that similar measures have not been provided to cover the rest of the islands. Territorial action is necessary to back up any county measure of this kind, by way of providing for the expenses of administering the test to cattle. With regard to Oahu, the expense was less than it would be on the other islands, as the departmental experts were more available here and travel a more simple problem, so that a moderate amount of assistance from the municipal treasury enabled the division of animal industry to take up the work of eradicating tuberculosis from the dairy herds of this island—a work which, happily, has been continued until the Territorial veterinarian is able to report it practically completed.

"Official Ayreshire Record No. 14" comes from C. M. Winslow, secretary of the Ayreshire Breeders' Association, Brandon, Vermont. There are eleven cows in the two-year-old form and the one standing highest is White Lilly of South Farm, John Sherwin, owner, her record being 12,022 lbs. milk, 503.88 lbs. fat, 588 lbs. butter and 4.19% fat. The lowest of the eleven in this form is Howie's Flora Macdonald, with 6320 lbs. milk, 271.55

lbs. fat, 317 lbs. butter and 4.3% fat. Of five in the three-year-old form, Langdyke Sally 2nd, owned by Geo. H. McFadden, is second, with 12,925 lbs. milk, 457.14 lbs. fat, 533 lbs. butter and 3.54% fat. In the four-year-old form there are eight cows, the leader being Mabel of Sand Hill, owned by S. S. Karr & Son, with 13,362 lbs. milk, 492.42 lbs. fat, 575 lbs. butter and 3.69% fat. The mature form contains six names, the best being College Maud, Kansas Agricultural College, owner, with 13,727 lbs. milk, 533.29 lbs. fat, 622 lbs. butter and 3.88% fat. These are the averages: Two-year-old form, 8717 lbs. milk, 353.06 lbs. fat, 412 lbs. butter and 4.05% fat; three-year-old form, 10,079 lbs. milk, 381.26 lbs. fat, 445 lbs. butter and 3.78% fat; four-year-old form, 10,560 lbs. milk, 424.10 lbs. fat, 495 lbs. butter and 4.02% fat; mature form, 10,977 lbs. milk, 420.62 lbs. fat, 491 lbs. butter and 3.83% fat; the whole, cows and heifers, 9888 lbs. milk, 390.22 lbs. fat, 455 lbs. butter and 3.95% fat. The leaflet says: "We are pleased to find that our claim that there are many great milkers in many of the Ayreshire herds is more and more proving true, as new herds are submitted to advanced registry tests. We believe that the Ayreshire breed will show a larger percent of profitable dairy cows than any of the other dairy breeds, and will show a higher average production, at less cost for food consumed."

The following cheerful statement of the rubber situation is from *Tropical Life* for September:

"The position disclosed by Hecht's Annual Statistics is a most satisfactory one. For the twelve months ended June 30, 1912, the world's production of rubber is given as 93,669 tons, as compared with 79,302 tons in the previous year. The total consumption, on the other hand, is returned at 99,564 tons, as against 74,082; an increase of 25,482 tons. The world's stocks of rubber on July 1 are put at 10,181 tons, as against 12,563 tons on the same date in 1911. The considerable expansion in consumption for 1911-12 is attributed largely to the lower level of prices prevailing during the year. This is, of course, a very healthy state of things, and people interested in rubber planting can hardly wish for anything more beneficial in the long run than the maintenance of the present steady prices for the raw material. With rubber at or below 5s. per lb., such an expansion of demand may be looked for as will completely absorb all increased supplies, and establish the planting industry upon a thoroughly sound basis, while enabling well-managed estates to pay quite remarkable dividends. It is interesting to note that (according to figures given by Messrs. Gow, Wilson and Stanton) for the first seven months of the current year the average price of plantation rubber is a fraction over 4s. 11d. per lb. compared with just over 5s. 3d. per lb. for the same period last year, that is to say, only 4d. per lb. less. This, in face of the increased yields, is good."

TERMITES AND WOOD PRESERVING.

(From Tropical Life for September.)

The depredations of Termites and the means of combating them constitute an ever-present problem to planters in the tropical zone; one also which occupies a great deal of the attention of the scientists whose lifework is the study of tropical conditions in agriculture and hygiene. The most interesting contribution to our knowledge on this important subject which has appeared for some time is an article in the July issue of the Agricultural Journal of India by Mr. T. Bainbrigge Fletcher, R. N., F. E. S., F. Z. S., Entomologist to the Government of Madras.

Mr. Fletcher premises his article by taking exception to the popular term "White Ant" in speaking of Termites, for, as he says, the "White Ant" is not an ant at all, and not necessarily white. He then proceeds to show that in the entomological sense Termites belong to quite a different order to true ants, and have very little in common therewith, except in their social habits and caste system. The steps by which knowledge is gained of the differentiation of the very large number of species of this insect, their geographical location, and peculiar habits and activities may be of little interest to the practical planter; but the summarized results of such patient investigation are invaluable in assisting him to safeguard his property, whether it be growing crops or wooden structures of any description that are exposed to attack.

Perhaps the most remarkable information in Mr. Fletcher's interesting article is that relating to the extraordinary reproductive power of Termites, of which the following may be quoted:

"A female of *Termes* Sp. taken from a mound at Toshangabad and placed under as natural conditions as possible, was found to have laid 359 eggs in fifteen minutes, a rate of oviposition which works out roughly at 34,000 per day."

Whilst the longevity of the female is quite unknown, it is suggested as being probably not less than five years, and possibly extending to more than double that time. Considering these points, it is unquestionable that, notwithstanding the heavy depletion of the ranks by natural enemies, the rate of increase is such as to create a serious menace in cultivated or commercial and shipping areas unless adequate means of protection are adopted. The destructive activity of the species *T. gestroi* on the rubber estates of the Malay Peninsula is a striking example of this.

Mr. Fletcher's article is accompanied by a fine colored plate illustrating a full-grown queen and workers at different stages.

The safeguarding of growing crops from Termite attacks is, of course, a wide subject in itself, and is being exhaustively dealt with in various parts of the world, according to the special

local conditions. However, it is with the protection of buildings and the preservation of woodwork generally that we are here generally concerned; and a few points on the efficient and economical treatment of timber may be worth bringing forward. The efficient preservation of woodwork is necessarily of more pressing importance in Termite infested countries than in the temperate zones where timber is for the most part only subject to the slower processes of bacteriological decay and not exposed to the attacks of such voracious insects, the destructive powers of which are startling in their rapidity.

The basis of all processes of preservation is the impregnation of the wood fibres with some antiseptic material toxic to living organisms. The means to accomplish this end are various, but may be broadly classified under three headings: (1) The pressure or combined vacuum and pressure method; (2) the open tank method; (3) the brush method.

For the practical planter the first method is out of the question on the point of the cost of the special plant necessary for transportation of the timber to some large centre where such a plant may exist.

The open tank, or immersion method, however, calls for some detailed consideration, as the only equipment absolutely necessary is any available watertight receptacle of sufficient length to take the timbers to be treated. Where time is no object the immersion of the timber in a cold preservative solution for a period of anything up to three or four days will ensure sufficient impregnation. Given, however, facilities for heating the solution, the treatment with any preservative can be greatly accelerated. Where such facilities exist, however, the quickest and most effective results can be obtained by immersing the timber, heating the solution up, and maintaining it at a temperature of 180° F. to 200° F. for half the total time for which the timber is to be immersed. The solution should then be allowed to cool for the remainder of the time before the timber is to be removed. The underlying principle of this operation is that the preliminary heating of the solution has the effect of expelling the air from the timber and expanding the wood cells. As the cooling proceeds a partial vacuum is produced, so that the preservative solution fills the cellular spaces from which the air has been displaced. The manufacturers of the well-known Atlas "A" Wood Preservative have carried out tests with railway sleepers, from which it has been determined that timber immersed for twelve hours in a solution heated for six hours and allowed to cool for the remainder of the time will absorb a greater percentage by weight of the preservative than similar timber immersed for twenty-four hours heated continuously for the whole period.

Under no circumstances can such thorough impregnation be obtained by the brush method as by immersion; but in many instances where sundry small quantities of timber have to be

dealt with at irregular intervals, painting the surfaces with a reliable, well-proved preservative material will ensure, at a nominal cost, sufficient prolongation of life and immunity from Termites to meet the requirements in view. A good alternative to brushing the preservative over the surfaces when a quantity of light timber is to be dealt with is to apply the solution by means of sprayers or rose watering cans. This can be effectively accomplished with the minimum wastage by laying, say, six planks close together side by side as a "floor." Spray them, turn them over, and spray the other side; lay a second "floor" of six planks directly on top, spray them, turn over, and spray the other side; lay the third "floor," and so on until a convenient height is reached. The timber should be left close stacked in the shade in this way for three to six days to allow the solution in contact to penetrate before opening out to dry. Whilst, of course, this is a quick and handy method for dealing with a quantity of anything up to 1½ in. planking, for heavier timbers open tank immersion is the most efficient method to secure the full benefit of any preservative material that may be used.

DIVISION OF ANIMAL INDUSTRY.

Honolulu, Oct. 7, 1912.

Hon. W. M. Giffard, President and Executive Officer, and Members of the Board of Agriculture and Forestry, Honolulu, T. H.

Gentlemen:—I have the honor to submit herewith my report as Territorial veterinarian for the month of September, together with such reports, communications and letters from assistant and deputy Territorial veterinarians and others pertaining to the work of the Division of Animal Industry. In order to facilitate action and when possible find disposition of plans for future work and recommendations pertaining to the service, it has struck me that it might be well to deal with each subject on a separate sheet or sheets, thereby obviating the necessity of keeping more than the unfinished part of the report on hand and allowing of the immediate filing of accepted or approved parts. If this plan meets with the approval of the Board, it will be adhered to in the future.

This report deals with the following subjects:

1. Human and Bovine Tuberculosis.
2. Quarantine Stations.
3. Regulations for Quarantine Station.
4. Letters and correspondence.
5. Island Horses for the U. S. Cavalry.

Respectfully submitted,

VICTOR A. NORGAARD,
Territorial Veterinarian.

HUMAN AND BOVINE TUBERCULOSIS.

Four years ago I had the honor to represent this Board as a delegate to the Ninth International Tuberculosis Congress, held at Washington, D. C.

As a result thereof I do not hesitate to say that the City and County of Honolulu is today practically free from bovine tuberculosis, and that the milk supply of Honolulu has been improved a hundred fold, and is today on a par with the best that is to be found anywhere. Thereby is not meant that it is perfect, far from it, as will be shown, but what in most places is considered an insurmountable obstacle, something to avoid or shirk or circumvent, that is, the eradication of tuberculosis from the dairy herds, has been accomplished in *one* of the counties of the Territory, and has demonstrated that the same can be done in the entire group.

The principal reason why I am taking this subject up at some length in this report is that two of my deputies, on Hawaii and Maui, are both of the opinion that tuberculosis has recently begun to spread at a much increased rate among the dairy herds in their respective districts, and further, that I have every reason to believe that had the work of eradication been delayed or deferred even one year longer here, we should have found conditions which it would have been impossible to tackle without extraordinary means and measures.

There have been times during the past four years when I have been in doubt as to the advisability or the justice of the policy adhered to, that is, the absolute and uncompromising eradication of the disease, the toleration not even of a single reacting animal on premises where milk is produced for human consumption, but I am happy to say that, as the reports on similar work done in other States, Territories or foreign countries are received, it has become more and more certain that under conditions like those which obtain here there can be no procrastination, no dilatory methods—that if we were to conquer the disease here, it could be only by way of the slaughter house and not by any “Bang,” “Ostertag” or “Birmingham” or any other method of eradication.

The preliminary reports of the Tenth International Tuberculosis Congress, held at Rome this summer, have just come to hand.

As in the previous meeting, the most important question was of human and bovine tuberculosis in their relation to each other. Only Prof. Koch was not there any longer to defend his ultra-radical views on the subject and more definite conclusions were agreed on. Every civilized country in the world was represented, there being more than 3,000 attendants. One of the most interesting papers was by Prof. Calmette, who, among many other things, mentioned (1) that judging from their appearance under the microscope the human and the bovine type of the tubercle bacillus cannot be definitely differentiated; (2) nor does culture methods distinguish them absolutely from each other; but (3) by

inoculation into various kinds of animals and especially into cattle proves more definitely which is which; (4) that the bovine bacillus is far more virulent or fatal to all mammals than the human form of the bacillus, except to the monkey, which is equally susceptible to both types; (5) that cattle cannot be infected, except locally, by inoculation with even very large doses of the human type; (6) that the bovine type, after sojourn for years in a human being, adapts itself to the appearance of the human type; (7) that in children who die from generalized tuberculosis, between the ages of 0 to 5 years, not less than 26.5 per cent show the presence of tubercle bacilli of the bovine type; (8) that between the ages of 5 to 16 years the same percentage is 25; (9) that above this age the percentage falls rapidly, as low as to 1.5 per cent, but whether this is due to transformation from the bovine to the human type, or due to direct infection from human being to human being through cohabitation cannot often be determined; (10) that it is an undeniable fact that below 16 years nearly 75 per cent of all children dying from tuberculosis show the presence only of the human type and above that age the percentage of fatal cases due to the human bacillus is 98.36. From which it is clear that for the suppression of human tuberculosis we must first prevent its transmission from one human being to another, but at the same time prevent the infection of children with the highly virulent bovine bacillus from the milk of tuberculous cattle.

Prof. Sims Woodhead of the Royal Tuberculosis Commission of England showed conclusively that about 20 per cent of tuberculosis in children was due to infection with the bovine bacillus; and Dr. Nathan Raw of Liverpool after confirming most of the above statements estimated that in Great Britain 15 per cent of all children who die from tuberculosis under the age of 12 years become infected with the bovine bacillus from milk. He proved by statistics that in countries where milk is boiled the amount of surgical tuberculosis in children (scrofulosis) is smaller, and he stated that with the vigorous inspection of dairy cattle the amount of surgical tuberculosis in children in Liverpool during the last ten years has, in his own hospital experience, been reduced by about 35 per cent. When we consider that this "vigorous inspection of dairy cattle in Liverpool" consists in the weeding out of "lungers," by physical examination, not by the tuberculine test, there is reason to believe that the percentage could be largely increased if our method were adopted.

However, the Italian Tuberculosis Congress clearly demonstrated, that the danger of bovine infection is now being widely recognized, the only difference of opinion now being as to the amount of such infection, and there can be little doubt that many countries will shortly adopt vigorous measures for its suppression.

In this connection I would mention the Congress of the Royal Sanitary Institute of Great Britain held at York, England, during the beginning of August this year. At this meeting Prof. Dewar

of the University of Edinburgh made an address on the subject of the tuberculous cow and what to do with it, from which I shall quote a few sentences merely to illustrate that what they are beginning to think about in England has been not alone thought about but carried into effect in this community, at least.

Prof. Dewar starts by discussing the vastly improved conditions of animal life and the prevention of animal diseases during recent years, but recalls that these, though very desirable and beneficent in themselves, are nevertheless merely the means to an end. It is in the relation which these questions bear to the improvement of the health of the community and in their preservation of human life that they mainly derive their importance. The prevalence of tuberculosis among the herds in Great Britain is admitted and while the dangers arising from the use of meat and milk from tuberculous animals is acknowledged to be less than was at one time believed, few, if any, will dispute their existence "and in the case of children and delicate or weakly individuals using raw milk the risk is a terribly real one."

Regarding the inaction of the Government in connection therewith he says: "For more than twenty years now (since Aug. 12, 1889,) the supervision of the health of the live stock of the farm has been committed to the care of a special Government Department and although that department has looked quietly on while tuberculosis was killing not only its thousands, but its tens of thousands annually without so much as moving a finger to prevent the spread of the disease, that is no reason why the department should not begin to move at last and do something by way of honest endeavor for the protection and improvement of the health of the live stock of the country. Perhaps our profession is not altogether guiltless in that it has not done more to educate the public regarding the terribly serious nature and the extent of the disease. We ought to insist, in season and out of season, that something should be done, that some attempt should be made to arrest the progress of this terrible scourge."

That is what the Division of Animal Industry has done for five years past and that is why we stand today where we do, thanks to the unfailing approval and backing of the board.

Prof. Dewar goes on to say that on June 14th this year the Scottish Chamber of Agriculture held a conference at Perth, at which a resolution "was stated to have been unanimously passed," demanding Government compensation for the tuberculous dairy cow, i. e., that instead of merely ordering the cow out of the byre, she should be condemned to be slaughtered, and compensation paid for her. Whether this "demand" bore any fruits is not known but the fact remains that the idea was a good one, as has been demonstrated here. To leave a tuberculous animal alive is simply to leave a center of infection, as isolation or segregation is an impossibility except in a government quarantine station.

That we succeeded in exterminating nearly one thousand tuber-

culous animals without paying any compensation was due in a great measure to the education of the dairy men up to the point where they realized that the sooner they cleaned up their herds, the smaller the loss would be. Besides this we were fortunate enough to find in the Revised Statutes an old law which makes it a misdemeanor to sell or otherwise dispose of an animal known to be affected with a disease transmissible to man. As all reacting animals are branded immediately with an official registered brand, known to everybody, it is not easy to dispose of or even keep on the premises a tuberculous animal.

Prof. Dewar further states that tuberculosis in cattle, owing to its great prevalence, cannot be dealt with like other infectious diseases. It would not only upset the dairy industry, but the live stock industry and other collateral industries in interfering seriously with the country's food supply.

The same was claimed here and a milk famine was predicted when suddenly more than twenty per cent of the milch cows in the district were declared tuberculous. Pasteurization, however, came to the rescue and the milk famine vanished. That proved one of the greatest blessings for the general health of this community, as the necessity for pasteurization resulted in a reorganization of the Dairymen's Association and the installation of a large modern electric milk purifying plant, which proved so absolutely satisfactory that even after all the tuberculous cows had been slaughtered, its use was continued, and at least 75 per cent of the milk consumed in Honolulu today is passed through it and reaches the consumer with less than 1000 bacteria per c. c.

In this connection it is worth mentioning that the Chief of the Federal Bureau of Animal Industry sounds an earnest warning against the use of un-Pasteurized milk, the same being based upon the fact that it has been definitely proven that the bacillus of infectious abortion is frequently found in commercial milk originating on farms where this disease occurs, not less than 11 per cent of all samples examined having been found contaminated with it. While it has not been definitely proven to be pathogenic to human beings, it is more than likely that it is, as it causes severe lesions in a variety of domestic and other animals.

When to this is added that the prolonged drouth which has prevailed here has been responsible for an unusual amount of dirt in the commercial milk in Honolulu and that the disease in question—infectious abortion—is known to exist here, then there is every reason for taking such precautions as may add to the safety of milk as a food, especially for children, and among these Pasteurization ranks as number one, whether the home or commercial variety.

The price of commercially Pasteurized milk in Honolulu has recently been raised to 12 cents per quart, but frequent bacteriological examination of this milk (see the appended report of the Assistant Territorial Veterinarian) as compared to the untreated

commercial article has fully demonstrated the absolute safety of the product, which at the same time due to the special process of Pasteurization has retained the taste, appearance, nutritive value and digestibility of fresh raw milk. It is, therefore, to be hoped that in some near future the entire milk supply of the city, at least, may be subjected to some process of purification similar to that now applied to the greater quantity now consumed here. An examination of Dr. Case's appended report will show that some of the producers of the samples examined could be prosecuted for selling impure milk, containing, as they do, a larger number of micro organisms than by law allowed, but I have personally examined some of the dairies from which these samples were obtained and found the premises and the milking methods so nearly perfect and the owners so anxious to comply with all regulations that I feel constrained to believe that the present high number of bacteria must be due to the drouth and the resultant amount of dust in the air.

But taken altogether the improvement in the local milk supply which has resulted directly from the eradication of tuberculosis from the herds,—not alone on account of the removal of the diseased animals, but to a very great extent also from the enforcement of the provisions of the Milk Ordinance incidental upon the repeated visits of the inspecting and testing officers (the city milk inspector always accompanies the testing inspector)—can hardly be conceived and must without doubt have contributed greatly to the general health of the community.

When to this is added that outside of the purchase of an automobile, which would have been required anyhow, no special expenditure or appropriation has been required, that in fact this Division, in spite of increased duties, is doing all the work with one \$1200.00 officer less than during the preceding biennial period, then it seems to me *that there is every reason for the extension of this work to the entire Territory.*

Reverting to the transmissibility of bovine tuberculosis to human beings, and especially to children, and at the same time remembering the appalling prevalence of tuberculosis among the population here, and especially among the natives—more than twenty-five per cent of all cases of generalized tuberculosis among children under 16 years being due to the bovine type of tubercle bacilli, that is, tuberculosis introduced by milk from tuberculous cows, then it appears to me indefensible to allow a single tuberculous animal to remain in the Islands since it has been demonstrated conclusively that the disease can be eradicated.

In the estimates of expenditures of the Division of Animal Industry for the present year I asked for \$3,000.00 for the extension of the bovine tuberculosis work to the other islands. As I am informed that no money is available for the purpose, I would respectfully suggest, in case the Board approves of the proposed work and so long as the sum required is insignificant in compari-

son to the human lives which may be conserved, that possibly the means can be obtained from other sources. The last Legislature, for instance, appropriated \$25,000.00 for tuberculosis work. If all of this money has not been expended, I can see no better way to do it than by assisting in exterminating the only known source of human infection, which can be exterminated.

In concluding this subject, the aim and object of which is the *complete eradication of bovine tuberculosis from the Territory of Hawaii*, a subject which has hitherto met with the unqualified approval and encouragement of the members of this Board, I beg to quote the last paragraph of Section V of the Recommendations of the Sanitary Commission (created under Act of the Legislature of 1911) and which reads:

"Third—That a heavy fine be imposed upon any person convicted of selling milk from cows infected with tuberculosis."

"Finally, especial attention is called to the recommendations of the Milk Commission of 1910—that the control of milk be taken from the municipality and given to the Territorial Board of Agriculture in order to secure protection for the whole Territory,—to insure an effective enforcement of regulations governing milk and its source of supply."

QUARANTINE STATIONS.

During the past month the attention of the Board was called to the constant deterioration of fences, posts, gates and feed racks, especially in enclosures where quarantined animals are kept with scant or insufficient food. The two largest enclosures are now in such a condition that animals cannot safely be placed in them. Less than a year ago one of these enclosures was entirely reconstructed, having been completely despoiled by mules being left in it without feed for some time.

As the rules of the Board decree that all expenses in connection with the quarantine of animals must be borne by the owner, and as the owner in this case, in spite of repeated assurances to the contrary, has neglected to repair the damages done by his animals, the matter is respectfully referred to the Board for action.

For the information of the Board, I would submit that the rules require imported animals to be quarantined on premises "provided by this Board" and that the owner may hold that the amount of feed he wishes to give them concerns nobody but himself; that idle work animals should be underfed; that all underfed animals will nibble at posts and boards, and that, consequently, the pens should have been constructed in such a way as to meet these contingencies. That the animals in this last case were neglected can be proved, the keeper having telephoned repeatedly for feed to be sent out and reported the conditions to the owner, but under ordinary circumstances it might prove difficult to establish just *when* the nibbling of a redwood post changes from a condiment to a

substitute for food. If it is held that the pens should be proof against the attack of horse teeth under all conditions and circumstances, then cement or concrete posts must take the place of the wooden ones, and boards and gates protected on all assailable corners and surfaces with sheet metal or wire.

The dog section is rapidly nearing completion, as owing to the small number of inmates, thirteen at the present, the keeper has had considerable time to devote to painting. During the month one consignment of three bull dogs arrived from England and was admitted to the Territory without quarantine. This was due to the fact that a permit to import them had been applied for and granted six months ago, England being officially recognized as free from rabies. A certificate to that effect accompanied the animals and as the steamer bringing them had not touched at any port on its way here from Liverpool, the dogs were entitled to free entry in accordance with Rule VI of this Division.

In regard to the future arrival of dogs belonging to officers or enlisted men of the U. S. forces stationed here, as well as to theatrical companies or other owners of performing dogs, I would respectfully suggest that the Board express an official opinion, by motion or otherwise, to the effect that the term in Rule VI, pertaining to the quarantining of dogs "*on premises provided by this Board*" is in the future, to be interpreted to mean only the Board's quarantine station in Honolulu, unless the Board should decide to allow the new quarantine stations to be constructed at Hilo and Kahului to be provided with sections for dogs. As this question has already been brought up by the Maui deputy, an opinion at this time would be in order, since a change would require the amendment of the present rule, including the Governor's approval and advertising.

In regard to the Hilo quarantine station site, I am informed, as per appended letter, that the site has been granted and surveyed and that the plan is with the agents in this city.

When this is accepted by the Board, it will be necessary to rearrange the relative position of pens, alleys and sheds in the present plan, in accordance with the shape of the new site and to have new blue prints made for the use of the bidders and contractor.

As this will require some little time, I would suggest that I be directed to go to Maui and select the site for the station there, so that I may get to work on the plans for the same.

REGULATIONS FOR QUARANTINE STATIONS.

During the past month a set of rules to be posted at the Quarantine Station and pertaining to the admission of visitors and regulating the actions of owners of quarantined stock while on the premises was submitted for the action of the Board, and is still awaiting the same. As the keeper is constantly complaining

about being unable to properly care for the stock without certain restrictions being placed on owners and visitors, the approval of the Board of the recommended rules is respectfully requested. Copies of the same are herewith appended.

ISLAND HORSES FOR THE U. S. CAVALRY.

A transaction of considerable import to the local live stock industry took place last week when a considerable number of island bred horses were purchased for cavalry mounts to be used by the forces stationed here. Though the matter has been under consideration for a long time and was highly recommended by the officers stationed here and who had learned to appreciate the high-spirited surefooted native horses, it seemed that there were insurmountable obstacles emanating from elsewhere, until suddenly the barriers were let down. The horses purchased were all bred on the Parker Ranch on Hawaii and it is confidently expected that these horses will prove so satisfactory as to establish a demand for many more at remunerative prices. As a regiment is rarely stationed in one place more than two or three years and always take their mounts with them when moved, there seems, as stated, to be brighter times ahead for the horse breeders of the Islands.

LETTERS AND CORRESPONDENCE.

Letters from the Deputy Territorial Veterinarians on Hawaii and Maui pertaining to the proposed stations to be built there, as well as to the tuberculosis control work, are herewith appended. Also copy of a letter to the three deputies in regard to the extension of the tuberculosis work to their respective islands.

ATTEMPTED ILLEGAL IMPORTATION OF DOG.

The appended statement, pertaining to an attempt at landing a dog from the S. S. Ventura on the arrival of this ship at Honolulu, Sept. 30, in contravention of the dog quarantine regulation of this Board, was made before the Deputy Attorney General and is self-explanatory. Pending action of the Attorney General's Department in the matter, I have deemed it proper to make no further comment on the subject in this report, particularly as all the facts relating thereto have already been laid before the members of the Board.

As the efforts of the California State Board of Health at checking the spread of the disease, seem to be of little avail (see the enclosed reports of the Director of the Bureau of Hygienic Laboratories of the California State Board of Health), there is a constantly increasing danger of the disease reaching the Territory, unless the preventive measures established by this Board are strictly adhered to and that both the steamship companies and the

owners of dogs are made to understand that the regulations in question must be complied with, to the letter.

Territory of Hawaii.
Board of Commissioners of Agriculture and Forestry.
Division of Animal Industry.
Animal Quarantine Station.
Notice.

From and after this date owners of quarantined dogs, and other visitors, will be admitted to the kennel enclosure only at the hours of 10 to 11 a. m. and 3 to 4 p. m. on week days, and between 2 and 4 p. m. on Sundays and holidays.

Under no circumstances will owners or visitors be admitted to the kennel enclosure unless accompanied by the keeper who will see to it that visitors do not pet or otherwise handle or feed the quarantined animals.

The wishes of owners or agents in regard to diet and care of quarantined dogs will be complied with when consistent with sanitary or hygienic requirements, but in order to prevent the possible transmission of infection to human beings it is necessary that no actual contact between visitors or owners and the dogs be allowed, except by special permission or in the presence of one of the veterinary officials of the Board.

Horses, mules and asses in quarantine must remain in the enclosures assigned to them for the entire quarantine period, unless a change is required for sanitary or hygienic reasons, in which case permission must be obtained from the Territorial Veterinarian or his assistant and the change effected in his presence.

To remove or replace halters, or to divide or separate bunches of horse stock the animals must be taken to the enclosed yard where a cutting chute is provided for the purpose. Under no circumstances are bunches or flocks to be divided or individual animals roped or caught in the woven wire enclosures.

Visitors to or prospective purchasers of quarantined horse stock will not be allowed to enter the enclosures except when accompanied by the owner or his representative, who will be provided with a duplicate key to the enclosure where his animals are kept.

All imported work animals must be removed from the quarantine station before sunset on the day the quarantine period expires. If not removed a charge of 25 cents per head per day will be made, the same to be collected by the keeper in charge before the animals are released.

All live stock imported for breeding purposes shall be entitled to the use of the station without cost and for such period of time

as may be required for observation, rest, treatment or testing before proceeding to their ultimate destination in the Islands.

.....
Territorial Veterinarian.

Approved:

Honolulu, Sept., 1912.

.....
President and Executive Officer Board
of Agriculture and Forestry.

STATEMENT OF DR. NORGAARD IN RE ILLEGAL IMPORTATION OF DOG
BY MAURICE A. BRASCH.

Pursuant to instructions received from the Attorney General's office as well as from the Board of Agriculture and Forestry, I called, accompanied by the Assistant Territorial Veterinarian, Dr. Case, on Mr. Maurice A. Brasch, at his place of business on Fort street, Honolulu, this afternoon, September 30th, informing him that I was authorized to receive from him a statement, if he so desired to make one, regarding the landing of a dog from the steamship Ventura arriving at the port of Honolulu this morning at 8 o'clock from San Francisco, the said dog being landed in contravention of Rule 6 of the Division of Animal Industry of the Board of Agriculture and Forestry of the Territory of Hawaii. Mr. Brasch admitted his willingness to make such statement and related that the dog in question had been purchased in England; had been shipped by him on board the Lusitania, where at least one other dog was shipped, to New York. Between New York and San Francisco the dog had been left in charge of the expressman in the usual manner, the owners wherever convenient taking the dog from the express car for an airing at such places as Chicago, Omaha and Ogden. In San Francisco the dog was placed on board the steamship Ventura, and according to Mr. Brasch's statement no information was given him in regard to the regulations of this Board prohibiting the admission of dogs to this Territory unless subject to quarantine. Mr. Brasch's memory was refreshed in regard to a somewhat similar case which occurred prior to his leaving for the United States during the month of May, which he admitted he remembered, but thought that the restrictions then in force had long since been rescinded. When asked if he had noticed any posters in the ticket office of the Oceanic Steamship Company or on board the Ventura pertaining to the quarantine of dogs in these Islands, Mr. Brasch stated that he had neither heard nor seen anything to that effect, nor that any officer or employee on board the Ventura informed him or called his attention to the fact that his dog would have to go into quarantine upon arrival here. When asked how the dog was taken

ashore, he stated that the dog was placed in the traveling basket in which it had been carried all the way from England and that Mrs. Brasch carried it under her arm past the customs inspectors ashore, where it was handed to an expressman who carried it to the residence of Mr. Brasch at 1520 Keeaumoku street. The receipt for the same is herewith submitted.

VICTOR A. NORGAARD.

The above statement is correct.

L. N. CASE.

Honolulu, Hawaii, September 30, 1912.

REPORT OF ASSISTANT VETERINARIAN.

Honolulu, October 3, 1912.

Dr. Victor A. Norgaard, Chief of Division of Animal Industry,
Bureau of Agriculture and Forestry, Honolulu, T. H.

Sir:—I beg to submit herewith a report on the work for the month of September.

Tuberculosis Control.

The following animals were submitted to the Intradermal test:

J. H. Cummings.....	1 cow; passed.
M. Riedell	1 cow; “
Geo. Wond	2 cows; “
C. F. Peterson.....	1 cow; “
F. M. Swanzy.....	1 bull; “

These animals had been purchased in different parts of the island for use in the city dairies and were purchased subject to the test which each animal successfully passed. In educating the dairymen up to the point where they will not buy an animal unless it passes the tuberculin test we have advanced a long way in the control of the disease and its eventual eradication. The next step to be gained is to impress upon the dairymen the importance of inquiring into the health records of that herd from which they desire to purchase animals and to select that herd which has been free of the disease at least two or three years. In so doing there is practically no chance of buying an animal which has been exposed to infection. Such an animal even though infected would pass successfully the tuberculin test only to develop the disease later, perhaps in two or three months and infect the entire dairy.

These points are of great importance and it is due to the entire ignorance on the part of dairy owners of the nature and course of the disease with which they are dealing that so much opposition is encountered and so much distrust evidenced in the application and efficiency of the tuberculin test.

Laws and ordinances may be enacted and enforced and a man thus compelled to have his herd tested, but if he has little knowledge of the disease, he will not carry out a thorough cleaning and disinfecting of his premises, without which the tuberculin test is of little avail. The average dairyman sees in the frequent cleaning and disinfecting of his premises only a waste of labor with no apparent results, but let it be said here that his success in maintaining a herd free from tuberculosis is in direct ratio to the frequency and thoroughness of his disinfection.

Bacteriological Examination of the Milk Supply.

In order to obtain some data on the condition of the milk as it reaches the consumer, a series of bacteriological examinations were made of samples taken from dairies scattered throughout the city. The results have been high counts, which indicates that the milk is not being handled with anywhere near the care that is necessary to produce a superior article.

In all fifteen samples were examined, the results of which are as follows:

Procedure.

In each instance a dilution of 1 to 500 was used and with the exception of Samples 1 and 2, in which I made four plates, three plates were made from each sample. The period of incubation varied.

Results.

Sample 1 taken from the Honolulu Dairymen's Association consisted of 14 hr. old milk from Geo. Holt's dairy.

Sample 2 consisted of the above milk after it had passed through the purifying apparatus. In subjecting it to this process it was strained through two layers of cotton and cheese cloth, exposed to a steam temperature of 150° F. and an electric temperature of 164° F. and then cooled at once to a temperature of 40° F.

After incubating for 48 hrs. at room temperature (27° C.) examination gave the following:

Sample 1.....	10,540,000	bact. per cc.
“ 2.....	500	“ “ “

This shows admirably the effectiveness of the Groucher system of purifying milk.

Sample 3—Geo. Wond	30,000	bact. per cc.
“ 4—T. F. Farm.....	2,033,000	“ “ “
“ 5—K. Yamashita	1,285,000	“ “ “
“ 6—T. F. Farm.....	2,773,000	“ “ “
“ 7—F. Medeiros	1,520,000	“ “ “
“ 8—P. Miyakawa	850,000	“ “ “
“ 9—R. Davison	750,500	“ “ “
“ 10—W. P. Alexander.....	324,450	“ “ “

These samples were taken from the milk as it was ready to be delivered to the consumer and, with the one exception of Geo. Wond, must be considered dirty milk. Of the two samples taken from T. F. Farm, No. 4 represents milk from his own herd and No. 6 mixed milk from Chas. Lucas, Joe Gouviera and T. McGuire dairies, which he retails in bottles. The count was made after 120 hrs. incubation at 27° C.

Sample 11—S. de Nobriga.....	2,820,000	bact. per cc.
“ 12—Frank Valph	3,020,000	“ “ “
“ 13—M. Kawamura	1,120,000	“ “ “
“ 14—Richard Kapena	945,000	“ “ “
“ 15—V. Souza	3,224,300	“ “ “

The count was made after 96 hrs. incubation at 27° C.

That such counts should be possible shows that something is radically wrong in the handling of the milk; either the product is contaminated when being drawn from the cow or when it is being cooled and put into containers; probably it is a combination of the two.

Extreme care should be used in the production of such an important food as milk. The opportunities for its contamination are many and the overlooking of a single point will result in the production of an inferior article. To obtain a clean product clean methods must be employed. It avails nothing to milk into a sterile pail through a small opening if the flanks and udder of the cow are dirty; the floor a foot deep with manure and the animal switching its tail continually.

Taking for granted that the milk is drawn under ideal conditions, i. e., clean stable; clean animal with tail confined; clean milker with clean, properly constructed pail, the milk will become contaminated and show a high bacterial count if poured over a cooler which is exposed to the dust and dirt which can blow into the milk room from the street or barn yards and then put into improperly cleaned bottles or cans.

These are points to be closely watched by the milk inspector in his daily round of inspection. Milk can and should be produced here with a count of 100,000 bact. per cc. or less and nothing over that amount should be allowed. If the count is higher, it shows conclusively that some point in the routine of production is being overlooked or slighted. This should be rectified and proper methods enforced by the inspector.

Inspection Service.

One trip was taken to Schofield Barracks on September 5th for the purpose of giving the dogs quarantined there a final inspection and to release them, as the 120 days expired on that date. As far as could be observed, they were in fine condition and nothing further has developed since their release. It is to be hoped that

if in the future dogs are to be quarantined on the reservation, suitable and better appearing kennels may be erected.

Live Stock.

List of live stock entering the Territory at the port of Honolulu:

- S. S. Sonoma—San Francisco, Sept. 2—
1 black Spitz dog—Thomas Lasso.
S. S. Wilhelmina—San Francisco, Sept. 3—
1 white Toy poodle—Miss Thornton.
4 cts. poultry.
S. S. Honolulan—San Francisco, Sept. 11—
31 mules, 4 horses—N. H. Churchill.
41 mules—G. Schuman.
4 Hereford bulls—Haleakala Ranch.
4 cts. poultry.
S. S. Makura—Vancouver, Sept. 11—
1 dog—Geo. Freeland (quar. at Honolulu).
S. S. Sierra—San Francisco, Sept. 16—
13 cts. poultry.
S. S. Persia—Orient, Sept. 18—
1 ct. Jap games.
S. S. Mongolia—San Francisco, Sept. 20—
1 lioness; 2 leopards; 2 pumas—Carlos Bernado.
S. S. Ventura—San Francisco, Sept. 30—
1 dog—Maurice Brasch.

Respectfully submitted,

L. N. CASE,

Assistant Territorial Veterinarian.

DIVISION OF ENTOMOLOGY.

Honolulu, Sept. 30, 1912.

Hon. Board of Commissioners of Agriculture and Forestry,
Honolulu.

Gentlemen:—I respectfully submit my report of the work of the Division of Entomology for the month of September, as follows:

During the month there arrived 36 vessels of which 24 carried vegetable matter. The usual careful inspection was made with the following results:

<i>Disposal with principal causes.</i>	<i>Lots.</i>	<i>Parcels.</i>
Passed as free from pests.....	1168	27,593
Fumigated	11	54
Burned	27	27
Returned	1	14
Total inspected	1207	27,688

Rice Shipments.

During the month 23,831 bags of rice arrived from Japan, each shipment accompanied with a certificate of fumigation at Kobe and after our careful examination all shipments were passed as free from pests.

Pests Intercepted.

Twenty-seven packages of fruit and vegetables were confiscated from passengers and immigrants during the month. In a shipment of Orchids from Manila we found larvae of *Aetheopeus aterrimus*, a few *Elaterids*, *Staphylinids*, a *Capsid* and a few *Crickets*. In soil around a plant from Japan we found an Earwig with a cluster of eggs. Fourteen boxes of lemons were returned to the shipper at San Francisco on account of being badly infested with the Lemon scale, *Aspidiotus hederae*. A basket of apples which a passenger brought from Seattle showed the fruit badly infested with the Oystershell scale, *Lepidosophes ulmi*, and these were destroyed.

Beneficial Insects.

We distributed 12 lots of Japanese beetle fungus to various applicants. We find it very difficult to get people to collect the beetles for inoculation and our time is so limited that we are unable to furnish inoculated beetles unless those desiring them will deliver quantities to the office.

Hilo Inspection.

Brother M. Newell reports the arrival of 9 vessels, 4 of which carried vegetable matter and 1 moulding sand. There were 191 lots and 1847 packages of fruits and vegetables. Eleven packages had to be treated before delivery.

Inter-Island Inspection.

During the month of September 63 steamers were attended to and the following shipments were passed:

75 packages Plants.
573 bags Taro.
3 packages Fruits.
2 packages Cocoanuts.
1 package Lilyroot.

654 packages total inspected and passed.

The following packages were refused shipments:

22 packages Fruit.

7 packages Plants, infested and carrying soil.

29 packages total inspected and refused shipment.

Respectfully submitted,

E. M. EHRHORN,
Superintendent of Entomology.

DIVISION OF FORESTRY.

REPORT OF FOREST NURSERYMAN.

Honolulu, Sept. 30, 1912.

Hon. W. M. Giffard, President and Executive Officer, and Members Board of Agriculture and Forestry, Honolulu, Hawaii.

Dear Sir:—I herewith submit a report of the principal work done during the month of September:

Nursery.

Distribution of Plants.

	In seed boxes	In boxes transplanted	Pot grown	Total
Sold	151	151
Gratis	7000	300	1372	8672
	<hr/> 7000	<hr/> 300	<hr/> 1523	<hr/> 8823

Collections on account of plants sold amounted to \$2.85. The dry weather and the short time that now remains before Arbor Day, when trees will be given gratis, there is no doubt accounts for the small quantity sold.

Seed Collecting.

The collecting of seed on Tantalus has been continued and we are now getting together quantities of such seed that may be wanted during the coming planting season. From Tantalus we have already collected 15 lbs. of eucalyptus robusta seed, 3½ lbs. of eucalyptus citriodora, and about 1½ lbs. of koa. Smaller quantities of other varieties are being collected.

Plantation Companies and Other Corporations.

The plants distributed from stock raised for companies and corporations who are supplying labor and material for propagating the trees, amounted to 3800 pot grown and 12,000 seedlings in seed boxes.

At the Nursery and Makiki station we are at present propagating 12,000 ironwood trees to be delivered in transplant boxes ready to set out in December; also 200,000 assorted eucalyptus seedlings to be delivered in a few weeks. Another order for 300,000 assorted eucalyptus, to be delivered about December or January, will be started soon.

Makiki Station.

Rearranging the quarters and building an extra shed, also getting ready trees for Arbor Day, constituted the principal work for the month.

The writer, at the request of the ladies of the Outdoor Circle of the Kilohana Art League, has devoted a good deal of time to the pruning and planting of trees along the streets. A much needed pruning of the pink and white shower trees along both sides of Piikoi street has been done. This work required careful attention as the trees had been neglected and both the sidewalks and the driveway were beginning to be encroached on by the low hanging branches. The trees on other streets require attention in the same manner. The favorable comments which we have heard since we started the pruning of trees along the streets would indicate that most people desire to walk on the sidewalk instead of being compelled to leave the sidewalk and take to the driveway owing to the low hanging branches. The interruptions do not always come from the sidewalk trees but also from trees that are planted on private property and allowed to branch over the sidewalk and on to the street in some cases. A law to enforce judicious pruning on streets and sidewalks would be a step in the right direction. Circular No. 2 of the Division of Forestry comments on this very subject in the following words: "Trees should never be allowed to intrude upon the street or highway. Branches must be cut to avoid scratching the tops of vehicles, or people's hats or umbrellas on the sidewalks," etc.

The work of planting both sides of Wilder Avenue is progressing and will be finished in a few days. A gang of prisoners from the county jail is doing the work. This street extends from Pensacola street to Metcalf street. About 200 poinciana regia trees will be used which are being supplied from the Nursery.

U. S. Experimental Planting, Nuuanu Valley.

The long, dry spell has kept the planting back and we have been

obliged to care for the trees at the Makiki Station until there is moisture enough to warrant the planting of more trees.

Very respectfully,

DAVID HAUGHS,
Forest Nurseryman.

CARE OF THE HORSE.

(Read before the Medical Association of the San Francisco Veterinary College, 1818 Market street, San Francisco, California, by Student Robert Cilker, during 1911-12 session.)

Sand Cracks.

Sand cracks are classified according to their location. They are called toe cracks when occurring in the middle line of the horn of the toe, and a quarter crack when occurring in the horn of the quarters. There are also sand cracks of the sole and of the frog met with, but are not plentiful, and rarely serious enough to cause much trouble.

The toe crack is met with more often in the hind foot than in the fore, while the quarter crack is met with more often in the fore feet, and is here usually confined to the inner side. The portion of the wall known as inside and outside of the toe is seldom affected. A crack is called complete when it extends from the coronary margin of the wall to its wearing edge, and is incomplete when it is not so extensive. A simple crack is one that occurs in the horn only and does not implicate the sensitive structures beneath. A complicated crack is one that is deep enough to allow of laceration and subsequent inflammation of the sensitive membrane; such complications may vary from a simple inflammation set up by laceration, and irritation of the sensitive structures, by particles of dirt and grit that have gained entrance through the crack, to other and more serious changes in the shape of the formation of pus, hemorrhage from the blood vessels, caries of the coffin bone, or there may be a tumor-like growth of the horn on the inner surface of the wall.

Causes of Quarter Crack.

One of the causes of quarter crack is the faulty conformation of the animal, and I will take up this cause first. In the animal, with turned out toes, more than a fair portion of the animals weight is thrown upon the horn of the inner quarter; here there are three causes exerting their influence together. The horn is brittle, the wall of the inner quarter is thinner than that of the outer, additional weight is placed upon it and fracture is the result. Another

cause for quarter crack is in the condition of the hoof known as contracted heels. With the contraction and its pressure upon the sensitive structures within the region of the quarters and frog has arisen a low type of inflammation and the horn has become dry and brittle in this region. The exciting cause in its fracture is found in a hard day's work upon a hard, dry road, with perhaps a suddenly imposed improper distribution of weight, due may be to stepping upon a loose stone or a succession of such evil transfers of weight due to traveling upon a road that is very rough in its whole extent. Another cause for quarter crack is where the wall is very soft from poulticing or perhaps due to the animal feeding in a pasture that is very moist. When this animal is put to work upon a hard dry street the sudden change from extreme moisture to extreme dryness, combined with hard work will cause the wall to deteriorate and may be the cause of a crack. Unskilful shoeing also plays a part in causing sand crack. Removal of the periople by excessive rasping is a pre-disposed cause. Cracks or their starting points may also be caused by using too wide a shoe. Poor shoeing does not cause cracks though as much as many other things, for more depends on the state of the wall and conformation than upon the existing cause.

Toe Crack.

This crack is met with nearly always in a heavy animal, in the hind feet, and is directly attributable to starting a heavy load.

Cracks of the Sole and Frog.

Sand crack of the sole and frog is but seldom met with and then it is in connection with some exceptionally deteriorated quality of the horn, or occurs as the result of a direct injury and from a badly pumiced foot.

Treatment.

In a simple case where the crack is superficial and close under the coronary margin of the wall a sharp cantharides blister to the coronet immediately above it will be very effective, as in this manner an increased secretion of the horn is brought about and the crack prevented from becoming longer. No matter what treatment you use a blister applied to the coronary margin is always beneficial. To get the best result from a blister it should be repeated several times and at intervals of about two weeks. Another method known as clamping the crack is usually used where the crack is rather long. There are a good many different kinds of clamps and so I will only endeavor to describe one. This clamp called Koster's Sand Crack Clamp, is rather wide with five teeth on each side. A groove is burned on each side of the crack to accommodate the jaws of the instrument and the clamp itself pressed home by means of a special pair of forceps. No clamps

should be put on unless the wall is moderately strong, and the wall should be thick. All clamps are put on for the same purpose, to try and stop any movement of the wall in the region of the crack.

Other means employed are by paring out on both sides of the crack, starting about a half an inch on both sides of the crack and cutting it out to the bottom at an angle. Apply an antiseptic dressing and over this cotton, then wrap the whole foot with tape as tight as possible. The tape is used for two reasons, to dry and keep out as much dirt as possible and stop the movement of the wall in the region of the crack.

The following prescription is one of the most beneficial used in the treatment of cracked or brittle feet:

R

Yellow Wax
Olive Oil
Lard
Venice Turpentine
Honey, of each 8 ounces.

Melt lard, wax and honey (slow fire), then add the rest, and stir until cold. Apply once daily.

Surgery.

This method is only indicated when the crack is greatly complicated by the presence of pus, or by the growth of adventitious horn on the inner surface of the wall. When the crack does not extend the whole length of the wall, the best method is to cut out a triangular piece with the base uppermost, cutting as deep as the sensitive lamina. With the removal of the horn the diseased structures are exposed to view. All such should be removed by a free use of the scalpel and a suitable dressing afterward applied. If the crack runs the whole length of the hoof take out a piece on either side of the crack, the whole length of same. After treatment is exactly the same as the one just referred to.

Shoeing.

A partial rest is given to the affected parts by easing the bearing of the shoe at the point required. This may be done either by removal of part of the wall at the spot indicated, or by thinning the web of the shoe in the same position. Never have a clip directly under the crack or where the weight would fall. If it is a toe crack the usual clip should be dispensed with and a clip on each side made to take its place. At the same time care should be taken to avoid throwing the weight forward. In case of a quarter crack, where the constant movement of the part under the expansion and contraction of the foot makes itself most felt, it is wise to apply a shoe with clips fitting moderately tight against the inside of the bars. By this means movement will to a large extent be stopped.

MISLEADING EVIDENCE.

We have recently received several samples of fertilizers with requests that we would express an opinion as to the manure, because their colors created suspicion; indeed, there are hacendados who judge manures almost entirely by appearance and smell, and are thus liable to make serious mistakes.

Appearance, smell, or color are no guides; the only true test in buying fertilizers is chemical analysis, although the best test is made by the crop itself.

Nitrate of soda in appearance does not differ much from coarse impure salt, and can be relied upon, when imported from the mines in Chile, to contain approximately 16% of nitrogen.

Sulphate of ammonia is a substance which is very variable in appearance, it may be gray or white, or yellow, or blue, without any real difference in the quality; it contains more nitrogen than nitrate of soda, but being less soluble than the latter, it is consequently less valuable.

Superphosphate may be light gray, or a dark gray or brown; its tint simply depends on the color of the raw material from which it is manufactured. The hacendado need not trouble about the tint so long as the percentage of phosphate of lime is up to the guaranteed standard.—Exchange.

STATEMENT OF THE OWNERSHIP, MANAGEMENT, CIRCULATION, ETC.,

of *Hawaiian Forester and Agriculturist*, published monthly at Honolulu, H. T., required by the Act of August 24, 1912.

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“ “ Business Manager—C. S. Crane.....	Honolulu
“ “ Publisher—Hawaiian Gazette Co.	Honolulu
Owners—Board of Agriculture and Forestry, Govern- ment of Hawaii.....	Honolulu, T. H.

(Sgd.) DANIEL LOGAN,
Editor.

Sworn to and subscribed before me this 14th day of October, 1912.

[SEAL.]

(Sgd.) H. C. CARTER,
Notary Public.

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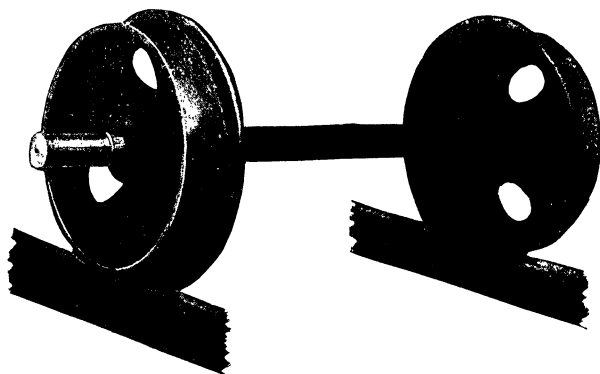
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etc., into the Territory of Hawaii." General Circular No. 1; 6 pp.

PUBLICATIONS FOR DISTRIBUTION—Continued.

- "Important Notice to Ship Owners, Fruit Importers and Others. Rules and Regulations Prohibiting the Introduction of Certain Pests and Animals into the Territory of Hawaii." General Circular No. 2; 3 pp.; 1904.
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